

Purdue evGrandPrix Collegiate

Technical Inspection 2024

Version date: 2023-Nov-16

Process:

- (1) Crew Chief completes a self-assessment of the kart and corrects all non-compliances.
- (2) Crew Chief presents the kart and completed technical inspection form to the evGP Technical Inspector. Please print on 2 separate pages.
- (3) evGP Technical Inspector performs a technical inspection to verify conformity. All non-compliances must be remedied by the team.
- (4) Once all criteria is satisfied, Technical Inspector provides inspection sticker, band, or other indicator

School Name	
Team Name	
Crew Chief	

Kart #	
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	Rule	Description	Pass (P) / Fail (F)		Tech. Inspector Comments
			School	evGP	
1 - Mechanical	CHASSIS				
	6.1.1	Frame: Sprint Kart chassis with structurally safe frame & welds			
	6.1.2	Wheelbase: 43" maximum; 39.75" minimum			
	6.1.3	Track width: 55.125" maximum; 28" minimum			
	6.2.1	Tires: Hoosier R60B Front - 4.5/10.0/5 Rear - 7.1/11.0/5			
	6.2.2	Wheels are racing quality and void of any defects			
	6.13	All race vehicles shall be equipped with pedal-operated hydraulic brakes as supplied by the manufacturer, operating in such a manner as to stop both rear wheels equally. Brakes must be able to lock both rear wheels at max speed.			
	6.14	#35 chain is the only allowable chain. Belt drive systems are allowable provided they are commercially available karting equipment or proper engineering analysis and testing adequately demonstrates safe use.			
	6.15	- Open mechanical drivelines including chain, belt, or gears must be guarded to reduce the possibility of personal injury and contact with the racing surface. - Sprockets and sheaves mounted on the rear axle drive components must include a blank sprocket guard. The blank sprocket guard must be at least 1/4" larger in diameter than that of the axle sprocket or sheave being used. 6.15.2 The lowest part of drive			
	BUMPERS & BODYWORK				
	6.3.1	Front bumper: Crushable CIK nose with push-back brackets			
	6.3.2	Rear bumper: Plastic CIK-style bumper			
	6.3.3	Side bars: - "C" type, side impact transferred to frame - Bottoms bars < 2" above the ground. - Top bars at least 4" above bottom bars - Extend to at least the middle of the rear tires and not beyond outer edge of rear tires			
	6.3.4	Driver Fairing: A CIK-style driver fairing is attached and has at least a 2" clearance to any part of the steering wheel. It does not exceed the level plane of the top of the steering wheel measured with the wheels in a straight line.			
	6.2.5	Proper protection in place to protect the battery pack			
2 - Equipment	DRIVER/ SAFETY EQUIPMENT				
	7.3.2	Helmet: Is closed face with an integral, immovable chin guard. Contains an integrated visor/face shield supplied with the helmet. Meets an approved standard and is properly labeled with its standard. <small>(Snell K2010, K2015, K2020, M2010, M2015, M2020, SA2010, SAH2010, SA2015, SA2020; SFI Specs 31.1/2010, 31.1/2015, 41.1/2010, 41.1/2015; FIA Standards FIA 8860-2004, FIA 8860-2010, FIA 8860-2018, FIA 8859-2015)</small>			
	7.3.3	Suit: The driver's suit is manufactured for racing. The suit is constructed of heavyweight, abrasion-resistant nylon. The suit covers the ankles and wrists while seated in the kart.			
	7.3.4	Gloves: The driver has gloves of Kevlar, leather, or vinyl material			
	7.3.5	The driver has an approved neck brace, socks covering the ankles, and full coverage sturdy shoes, boots or racing shoes.			
	7.3.6	The driver has a rib protector under his or her suit.			
	7.5.2	If the driver is a rookie (this is their first on-track event), the technical inspector will place fluorescent tape on the rear of the kart to designate rookie status.			
	7.1.3	Fire Extinguisher: Each kart must have at least one fire extinguisher with the kart at all times. Size at least 2.5 pounds. Rating: 10BC or 1A 10 BC.			
	NUMBERS AND DECALS				
	6.21.1	The number must be 1 or 2 digits and must be at least 5" tall. The number must be displayed on the driver fairing, both side pods, and the rear bumper of the kart. The number must contrast the body panel color, so it is easily read from a distance of 20 feet.			
	6.21.2	The school's name is displayed on the front and both sides of the kart and is legible from 20 feet away.			
6.21.3	The evGrandPrix logo is displayed on the front bumper of the kart.				

School Name	
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Rule	Description	Pass (P) / Fail (F)		Tech. Inspector Comments
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BATTERIES				
6.4.1	The kart's drivetrain must receive all its power from 1 (or more) electric motor(s) and the motor(s) must receive its (their) energy from a battery pack. All race vehicles must be powered from electricity supplied by a battery			
6.7.4	Custom-built battery packs must receive pre-technical inspection approval			
6.7.1	Battery Voltage – Battery packs, storage capacitors, and all other electrical components meant for energy storage are limited to a peak voltage of 100 volts.			
6.7.2	Battery Capacity – total stored energy must not exceed 4,320 watt-hours as determined by the packs nominal voltage and Ah capacity (stated on cell datasheet). Teams are prepared to show their calculations for total pack energy			
6.7.4	Battery securely attached to vehicle to protect it from direct impact and to withstand forces of impact. Battery mounting and enclosure designed to prevent puncture of battery. Anderson SB175 connector is used to allow PEM installation.			
6.7.4	Battery Enclosure – Batteries must be enclosed in a solid, shatterproof enclosure. No Acrylic is used. Cells are mounted in a way that ensures electrical isolation from the enclosure. Enclosure is sufficient to protect the cells from impact.			
6.7.5	Batteries must display all original manufacturers' labels. Teams must provide battery cell datasheet.			
BATTERY MANAGEMENT SYSTEM (BMS)				
6.8.1	Any kart that utilizes battery cells containing lithium, a Battery Management System (BMS) must be installed.			
6.8.2	6.8.2The BMS must reliably, accurately, and constantly measure the total pack current, total pack voltage, and voltages of all cells.			
6.8.3	The BMS must reliably, accurately, and constantly measure the temperatures of the battery cells whenever the kart's power is on.			
6.8.4	The BMS must isolate the battery pack (deactivate the kart) if it detects any of the following: a cell voltage outside the allowed minimum or maximum voltage levels stated in the cell data sheet, a cell temperature above 60 degrees Celsius or the maximum cell temperature stated in the cell data sheet, whichever is lower, any other unsafe condition.			
6.8.5	All teams will be prepared to describe their BMS's wiring, programming, and general functionality during tech inspection. The Tech Inspector will have the final say as on whether a kart's BMS meets the required safety functionalities.			
6.8.5	Teams will bring their laptop and BMS programmer to the track. Tech Inspectors will view the live individual cell voltages and the live temperature readings of the pack to validate BMS functionality			
WIRING				
6.9	All wires must be sized to handle the voltage and current load that can be applied through the circuit. Wires are protected from scraping or chafing and are not in danger of puncture from sharp edges and/or mounting hardware. No wires or terminals are exposed (terminal boot lugs or electrical tape may be used). Battery (+) and (-) is electrical isolated from the chassis.			
6.9.6	Every kart must have a green LED installed no more than 3 inches from the top of the driver fairing on the right side of the kart. The LED must come on any time the kart is energized (Battery pack connected to the motor, driver kill switch on, and Emergency stop disengaged). The LED must be the Ozium flush mount LED with the following specifications: Diameter = 11mm; Color = Green; Housing Color = Black; Style = Aluminum (1W); Lens = With lens.			
6.10	A fuse or circuit breaker is required for the electrical circuit between the battery and any electrical load. All fuses or circuit breakers will be mounted in electrically rated enclosures as close as practically possible to the source of power. All fuses or circuit breakers will be sized to protect the wiring to which they are connected. Fuses will be sized to carry no more than 85% of the maximum allowable current for the wiring.			
6.11	An emergency stop circuit must be employed on the vehicle. The circuit will consist of a driver kill switch located near the steering wheel and a mushroom-style emergency stop switch. The required mounting position for the emergency stop is on the left side of the kart on the top plane of the battery pack and between 10 to 15 inches in front of the rear axle.			
MOTOR				
6.4.2	Any type of electric motor is allowed. Motors must be rated by the manufacturer to handle the expected power load over the duration of the race.			
6.4.3	Any type of power controller is allowed. The forward power command to the motor must return to zero when the driver releases the accelerator pedal.			
6.5.3	Power & Energy Monitor can be installed on the battery pack where the batteries Anderson SB175 connector is located.			
POWERTRAIN SYSTEMS				
6.6	Throttle – a foot-operated throttle potentiometer is used. Two springs are installed to return the throttle to its "0% command" position. One spring may be the internal spring within the pot box.			
6.28	No computer or laptop is installed on the kart. Data acquisition is allowed but the device must not present a danger to the driver or other drivers on the track. Dangerous characteristics include large containers, material that can shatter, poor mounting, or small debris that can fall off the kart.			
6.30	Karts does not have the ability for reverse direction.			

3 - Electrical